

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-16. (Canceled)

17. (**Currently Amended**) An onboard terrain anticollision device for an aircraft, comprising:

a memory including topographic data of the terrain and/or of the obstacles overflown; and

information processing ~~apparatus comprising~~ means including:

an input configured to receive ~~for receiving~~ flight parameters;

a first trajectory prediction unit configured to establish ~~means for establishing~~ on the basis of said flight parameters at least ~~one first profile or a first safety surface or profile~~ corresponding to a first predicted trajectory, the first safety surface or profile having a first flight duration and being bounded laterally by a first left limit and a first right limit, said first right and left limits being defined essentially by a first lateral margin and at least a first angle of left lateral aperture and at least a first angle of right lateral aperture;

a first ~~means of topographic calculation unit configured to establish~~ ~~for establishing~~ on the basis of said flight parameters at least one first profile or a

first topographic surface constituted on the basis of the topographic data of the terrain and/or of the obstacles overflown;

a first comparison unit configured to establish ~~means for establishing~~ at least one first comparison between ~~said first profile or said first safety surface~~ or profile and a first profile or a first topographic surface for determining at least one first risk of collision of the aircraft with the ground;

a second trajectory prediction unit configured to establish ~~means for establishing~~ on the basis of the flight parameters a ~~second profile or a second safety surface~~ or profile ~~termed the immediate safety surface~~ corresponding to a second predicted trajectory, the second safety surface or profile having a second flight duration lesser than the first flight duration and being bounded laterally by a second left limit and a second right limit, said second right and left limits being defined essentially by a second lateral margin and at least a second angle of left lateral aperture and at least a second angle of right lateral aperture;

a second calculation unit configured to establish ~~means for establishing~~ on the basis of the flight parameters a second profile or a second topographic surface constituted on the basis of the topographic data of the terrain and/or of the obstacles overflown;

a second comparison unit configured to establish ~~means for establishing~~ a second comparison between ~~said second profile or said second safety surface~~ or profile and the second profile or the second topographic surface for determining a second risk of collision of the aircraft with the ground; and

~~an alarm means-unit~~ linked to said ~~information processing apparatus and~~  
~~configured to establish means for establishing at least a one first state of first alarm as a~~  
function of the results of the first comparison and a ~~second state termed the second~~  
~~alarm state as a function of the results of the second comparison, different from the first~~  
~~alarm state~~ the second alarm being generated when the second risk of collision cannot  
be avoided by a simple vertical avoidance maneuver.

18. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim  
17 wherein said information processing ~~apparatus means~~ further comprises:

a third trajectory prediction unit configured to establish means for establishing at  
least on the basis of the flight parameters a ~~third profile or a third safety surface or~~  
profile corresponding to a third predicted trajectory, the third safety surface or profile  
having a third flight duration greater than the first flight duration and being bounded  
laterally by a third left limit and a third right limit, said third right and left limits being  
defined essentially by a third lateral margin and at least a third angle of left lateral  
aperture and at least a third angle of right lateral aperture;

a third means of topographic calculation unit configured to establish for  
~~establishing~~ at least on the basis of said flight parameters a third profile or a third  
topographic surface constituted on the basis of the topographic data of the terrain  
and/or of the obstacles overflown; and

a third comparison unit configured to ~~means for establishing at least one third~~  
comparison between ~~said third profile or said third safety surface~~ or profile and a third

profile or a third topographic surface for determining at least one third risk of collision of the aircraft with the ground;

wherein the alarm unit ~~means~~ linked to said processing apparatus is further configured to establish ~~means for establishing~~ at least a one ~~state~~ termed the prealarm ~~state~~ as a function of the results of the third comparison.

19. **(Currently Amended)** The onboard terrain anticollision device as claimed in claim 17, wherein the second flight duration ~~first flight time of the second predicted trajectory~~ has a duration of less than 3 seconds.

20. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the first alarm is of the vertical avoidance alarm type and the second alarm is of the transverse avoidance alarm type, the vertical avoidance alarm corresponding for the pilot to a vertical avoidance maneuver and the transverse avoidance alarm corresponding for the pilot to a transverse avoidance maneuver.

21. **(Currently Amended)** The onboard terrain anticollision device as claimed in claim 17, wherein the first[[,]] ~~or the second or the third~~ safety surface or profile comprises two parts:

a first part corresponding to a first flight time ( $T_1$ ), dependent on a prediction of the trajectory in progress calculated on the basis of an origin (O) taken under the aircraft; and

a second part corresponding to a second flight time ( $T_2$ ) following the first flight time, dependent on a prediction of a vertical avoidance trajectory.

22. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim 21, wherein the parameters defining the first part of the trajectory or the second part of the trajectory of the immediate second safety surface can be substantially different from the parameters defining those of the ~~other~~ first safety surface[[s]].

23. (**Canceled**)

24. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim [[23]]17, wherein the first lateral margins or the first angles of right and left lateral aperture of the limit of the immediate safety surface or profile are substantially different from the second lateral margins or from the second angles of right and left lateral aperture of the limits of the other predicted surfaces.

25. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim 17, wherein at least one of the first comparison ~~means~~ unit or second comparison unit ~~means~~ comprise a criticality indicator of the risk of collision with the terrain.

26. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim 25, wherein the criticality indicator depends on the surface or the terrain profile situated

above the first or the second ~~or the third~~ safety surface or profile.

27. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim 25, wherein the criticality indicator depends on the surface or the terrain profile and the terrain height situated above the first or the second ~~or the third~~ safety surface or profile.

28. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the alarms are of audible or visual type.

29. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim 17, wherein the information processing ~~means~~ apparatus further comprise ~~an means for~~ managing ~~alarm[[s]]~~ management unit configured as a function of the evolution of the risks of collision with the terrain.

30. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim 29, wherein the alarm management ~~means~~ unit comprises ~~a device[[s]]~~ configured to switch the first and the second ~~for switching of the transverse avoidance and vertical avoidance~~ alarms.

31. (Previously Presented) The onboard terrain anticollision device as claimed in claim 30, wherein the switching is performed when the trajectory of the aircraft has evolved noticeably.

32. (Previously Presented) The onboard terrain anticollision device as claimed in claim 30, wherein the evolution of the trajectory of the aircraft is a change of the slope or of the roll or of the heading of more than a few degrees.

33. (**New**) The onboard terrain anticollision device as claimed in claim 18, wherein the first flight duration is no greater than 8 seconds, the second flight duration is no greater than 3 seconds, and the third flight duration is no greater than 20 seconds.

34. (**New**) The onboard terrain anticollision device as claimed in claim 19, wherein the first flight duration is no greater than 8 seconds.

35. (**New**) A method of operating an onboard terrain anticollision device for an aircraft, comprising:

receiving flight parameters;

establishing, on the basis of said flight parameters, a first safety surface corresponding to a first predicted trajectory, the first safety surface having a first flight duration;

establishing a first topographic surface according to the flight parameters and the topographic data of terrain or obstacles;

establishing a first comparison between the first safety surface and the first topographic surface for determining a first risk of collision;

establishing, on the basis of the flight parameters, a second safety surface corresponding to a second predicted trajectory, the second safety surface having a second flight duration lesser than the first flight duration;

establishing a second topographic surface according to the flight parameters and the topographic data of terrain or obstacles;

establishing a second comparison between said second safety surface and the second topographic surface for determining a second risk of collision;

generating a first alarm as a function of the results of the first comparison; and

generating a second alarm as a function of the results of the second comparison and when the second risk of collision cannot be avoided by a simple vertical avoidance maneuver.

36. (**New**) The method of claim 35, further comprising:

establishing, on the basis of said flight parameters, a third safety surface corresponding to a third predicted trajectory, the third safety surface having a third flight duration greater than the first flight duration;

establishing a third topographic surface according to the flight parameters and the topographic data of terrain or obstacles;

establishing a third comparison between the third safety surface and the third topographic surface for determining a third risk of collision; and

establishing at least a third alarm as a function of the results of the third comparison.



37. (**New**) The method of claim 36, wherein the first flight duration is no greater than 8 seconds, the second flight duration is no greater than 3 seconds, and the third flight duration is no greater than 20 seconds .